

Nebraska.—Genoa, 13th, 21st; Omaha, 22d; Red Willow, 2d, 13th, 22d.

New Jersey.—Barnegat City, 28th; Freehold, 28th; Moorestown, 30th.

New Mexico.—Fort Union, 11th.

New York.—Ithaca, 29th.

Ohio.—Cleveland, 29th; Toledo, 29th; Wauseon, 23d, 29th; Westerville, 29th.

Tennessee.—Ashwood, 4th.

Texas.—Fort Stockton, 13th, 19th.

Virginia.—Norfolk, 5th.

Wyoming.—Cheyenne, 7th.

SNOW.

Cheyenne, Wyoming.—A very light snowfall occurred here on the morning of the 22d, lasting from 6.30 to 10 a. m.

Mount Washington, New Hampshire.—The sleet storm which prevailed here on the 25th changed to snow at 10.40 p. m.

Marquette, Michigan.—Light snow fell at this place from 7.05 to 7.15 p. m. of the 27th.

Fort Totten, Dakota.—A light sprinkle of snow fell here between 8 and 9 a. m. of the 27th.

Neillsville, Clark county, Wisconsin.—Light snow fell here on the morning of the 28th.

Webster, Day County, Dakota.—The first snow of the season fell at this place on the 28th.

Saint Paul, Minnesota.—A light flurry of snow fell here from 6.20 to 10.20 p. m. on the 28th. Light snow also fell on this date at Minneapolis and Owatonna, Minnesota; and Saint Ignace and Sheboygan, Michigan. At Owatonna the walks and roofs of houses were covered to a depth of one inch.

La Crosse, Wisconsin.—A few flakes of snow fell at this place at 9 p. m. of the 29th.

Farmington, Franklin county, Maine, October 1st.—Three inches of snow fell in the northern part of this county during the night of September 29th.

SLEET.

Mount Washington, New Hampshire, 3d, 25th, 30th.

Pike's Peak, Colorado, 2d, 3d.

Traverse City, Michigan, 8th.

Table of rainy and cloudy days, relative humidity, and dew-point for Sept., 1883.

Districts.	Rainy days.	Cloudy days.	Rel. humidity, %	Dew-point.
			Percentages.	°
New England.....	From 8 to 14	From 5 to 11	From 66.9 to 78.7	From 45.9 to 54.4
Middle Atlantic states.....	" 5 " 14	" 7 " 15	" 65.1 " 83.8	" 48.5 " 63.1
South Atlantic states.....	" 7 " 16	" 5 " 12	" 67.8 " 85.6	" 48.2 " 69.4
Florida peninsula.....	" 7 " 17	" 1 " 9	" 74.5 " 78.4	" 69.6 " 74.0
East Gulf.....	" 3 " 7	" 2 " 5	" 64.1 " 71.4	" 61.0 " 66.6
West Gulf.....	" 4 " 12	" 2 " 9	" 62.5 " 79.4	" 55.0 " 70.8
Rio Grande valley.....	" 6 " 9	" Ten	" 86.0	" 70.2
Ohio valley.....	" 9 " 13	From 3 to 9	" 65.0 " 66.2	" 50.2 " 54.3
Tennessee.....	" 5 " 9	" 0 " 7	" 66.9 " 72.5	" 50.8 " 60.1
Lower lakes.....	" 12 " 17	" 3 " 15	" 67.1 " 74.5	" 47.8 " 51.8
Upper lakes.....	" 8 " 16	" 4 " 11	" 68.6 " 77.6	" 42.7 " 49.7
Extreme northwest.....	" 4 " 5	" 1 " 3	" 60.4 " 79.5	" 38.4 " 43.8
Upper Mississippi valley.....	" 3 " 11	" 2 " 8	" 62.1 " 70.4	" 45.9 " 56.7
Missouri valley.....	" 6 " 11	" 2 " 5	" 61.0 " 73.1	" 43.2 " 51.3
Northern slope.....	" 3 " 9	" 1 " 4	" 44.0 " 68.2	" 29.0 " 48.3
Middle slope.....	" 9 " 10	" 3 " 7	" 47.7 " 61.1	" 36.0 " 50.7
Southern plateau.....	" 1 " 8	" 0 " 3	" 29.4 " 52.6	" 30.1 " 49.9
Northern plateau.....	" 3 " 5	" 0 " 2	" 51.1 " 61.5	" 40.0 " 41.3
North Pacific.....	" 7 " 13	" 2 " 10	" 66.8 " 84.9	" 48.0 " 54.8
Middle Pacific.....	" 1 " 1	" 1 " 5	" 36.7 " 76.7	" 43.7 " 54.6
South Pacific.....	" 0 " 1	none	" 41.9 " 72.5	" 55.5 " 58.9
Mt. Washington, N. H.....	Sixteen	Two	85.7	34.4
Pike's Peak, Col.....	Twelve	One	77.6	23.9
Salt Lake City, Utah.....	Five	One	35.3	39.8
Fort Stockton, Texas.....	Thirteen	Seven	66.9	57.0

• Relative humidity corrected for altitude.

COTTON REGION REPORTS.

In the cotton growing states the rainfall for September, 1883, as compared with that for September, 1882, shows deficiencies in all districts, except for the district of Wilmington, where there has been an excess of 5.87 inches. The largest deficiencies, 3.11, 2.83, and 2.30, occurred, respectively, in the districts of Augusta, Savannah, and Montgomery.

The means of the maxima temperatures in the western districts are higher than those for September, 1882, while in some of the eastern districts they are lower. The means of the

minima temperatures are generally lower, the greatest deficiencies occurring in the districts of Little Rock, Memphis, and Charleston.

Temperature and rainfall averages for the various districts in the cotton region, as shown in the following table, are determined from observations made at the stations shown on chart vi., issued with the REVIEW for April, 1882:

Meteorological Record of the Cotton Districts for the months of September, 1882 and 1883.

Districts.	Average rainfall in inches.		Departures.	Temperatures.				Extremes for Sept., 1883.	
	1882.	1883.		Mean of the maxima.		Mean of the minima.		Max.	Min.
	1882.	1883.		1882.	1883.	Change.	1882.	1883.	Change.
New Orleans.....	2.64	1.22	- 1.42	86.7	88.4	+ 1.7	67.7	66.2	- 1.5
Savannah.....	4.94	2.11	- 2.83	87.1	86.5	- 0.6	67.2	65.6	- 1.6
Charleston.....	4.73	3.38	- 1.35	84.8	84.5	- 0.3	64.9	61.0	- 3.9
Atlanta.....	3.15	1.72	- 1.43	82.3	83.4	+ 1.1	62.3	61.1	- 1.2
Wilmington.....	3.49	9.36	+ 5.87	81.7	79.7	- 2.0	62.8	61.2	- 1.6
Memphis.....	1.69	1.05	- 0.64	82.7	85.3	+ 2.6	60.3	56.3	- 4.0
Galveston.....	3.50	2.58	- 0.92	86.8	88.7	+ 1.9	64.8	65.1	+ 0.3
Vicksburg.....	1.73	1.11	- 0.62	85.3	88.0	+ 2.7	61.7	61.2	- 0.5
Montgomery.....	3.10	0.80	- 2.30	84.3	86.5	+ 2.2	62.0	60.8	- 1.2
Augusta.....	4.43	1.32	- 3.11	83.9	84.8	+ 0.9	64.4	63.7	- 0.7
Little Rock.....	2.32	0.63	- 1.69	83.3	87.7	+ 4.4	59.0	53.3	- 5.7
Mobile.....	1.39	0.64	- 0.75	86.4	91.2	+ 4.8	62.8	62.8	0.0

WINDS.

The most frequent directions of the wind during September, 1883, at the Signal Service stations, are shown on chart iii., by arrows flying with the wind. In the states bordering on the Atlantic, from New Jersey southward, they were from the north-east; in New England, from the south and southwest; in the lake region, Ohio and upper Mississippi valleys, from the north-east and east; in the Missouri valley, from the north; in the west Gulf states, from the east and southeast; on the Pacific coast, from north and northwest.

TOTAL MOVEMENTS OF THE AIR.

[In miles.]

In the following table are given the stations reporting the largest and smallest total movements of the air in each of the various districts:

Districts.	Stations reporting largest.	Miles.	Stations reporting smallest.	Miles.
New England.....	Block Island, R. I.....	9,727	New London, Conn.....	3,981
Middle Atlantic states.....	Del. Breakwater, Del.....	12,666	Lynchburg, Va.....	2,360
South Atlantic states.....	Kittyhawk, N. C.....	12,438	Augusta, Ga.....	2,757
Florida peninsula.....	Cedar Keys, Fla.....	5,999	Key West.....	4,160
East Gulf.....	Pensacola, Fla.....	4,573	Vicksburg, Miss.....	2,324
West Gulf.....	Galveston, Texas.....	5,838	Little Rock, Ark.....	2,202
Ohio valley.....	Louisville, Ky.....	5,403	Indianapolis, Ind.....	1,840
Tennessee.....	Nashville.....	3,925	Chattanooga.....	2,976
Lower lakes.....	Sandusky, Ohio.....	8,605	Oswego, N. Y.....	4,954
Upper lakes.....	Grand Haven, Mich.....	7,134	Chicago, Ill.....	4,783
Extreme northwest.....	Bismarck, Dak.....	6,125	Saint Vincent, Minn.....	5,344
Upper Mississippi valley.....	Saint Louis, Mo.....	7,201	Dubuque, Ia.....	3,033
Missouri valley.....	Huron, Dak.....	7,658	Omaha, Neb.....	2,385
Northern slope.....	North Platte, Neb.....	7,365	Fort Benton, Mont.....	2,016
Middle slope.....	Fort Elliott, Texas.....	6,007	Denver, Col.....	4,541
Southern plateau.....	Fort Grant, Ariz.....	5,882	El Paso, Tex.....	2,965
Northern plateau.....	Dayton, Wash.....	2,799	Spokane Falls, Wash.....	1,705
North Pacific.....	Fort Canby, Wash.....	7,952	Olympia, Wash.....	1,064
Middle Pacific.....	San Francisco, Cal.....	6,779	Sacramento, Cal.....	3,657
South Pacific.....	San Diego, Cal.....	4,105	Yuma, Arizona.....	2,605

† For 29 days only.

On the summits of Mount Washington, New Hampshire, and Pike's Peak, Colorado, the total movements of the air were 17,665, and 10,277, miles respectively.

HIGH WINDS.

On the summit of Mount Washington, New Hampshire, maximum velocities of fifty miles or more per hour occurred on the following dates: 3d to 9th and 24th to 29th, inclusive. The highest velocities recorded were as follows: 80, nw., 3d; 72, nw., 5th; 108, nw., 9th, maximum for the month; 104, nw., 24th; 72, nw., 26th.

At Cape Mendocino, California, the wind velocities were recorded on only three days during the month, which are as follows: 68, se., 28th; 96, se., 29th; 76, se., 30th.

On the summit of Pike's Peak, Colorado, the highest velocity recorded was 52, sw., on the 1st. Other stations reporting wind velocities of forty-five miles or more per hour are as follows:

Smithville, North Carolina, 93, se., 11th.
 Fort Macon, North Carolina, 60, ne., 10th.
 Fort Canby, Washington Territory, 56, s., 8th.
 Cape Henry, Virginia, 53, ne., 11th.
 Buffalo, New York, 52, w., 25th.
 Kittyhawk, North Carolina, 52, ne., 10th.
 Sandy Hook, New Jersey, 50, nw., 25th.
 Barnegat City, New Jersey, 49, w., 24th.
 Hatteras, North Carolina, 48, ne., 10th.
 Fort Stockton, Texas, 48, sw., 30th.
 Cape May, New Jersey, 45, w., 25th.
 Indianola, Texas, 45, e., 5th.

LOCAL STORMS.

Duluth, Minnesota, 6th.—The heavy gale of this date caused very high sea on Lake Superior. The tug "Nellie Colton" and two scows were grounded during the morning, entailing a loss of \$8,000.

Port Huron, Michigan.—A severe storm prevailed on Lake Huron during the night of the 7th and on the morning of the 8th. The schooner "Winslow" and the barge "Raynor" drifted on the Canadian shore, near Point Edward.

Marquette, Michigan. A heavy northeast gale prevailed at this place on the 7th. The barge "Sumarta" dragged anchor and was blown on the beach. More than one million feet of logs were lost near Marquette.

Houston, Texas.—A violent thunder-storm passed over this place at 2 p. m. of the 7th. The rain fell in torrents for three hours. Much damage was done by lightning during the storm, several houses having been destroyed.

Port Huron, Michigan.—During the gale of the 8th numerous vessels on Lake Huron were blown ashore. On the 25th the steam-barge "East Saginaw" was driven ashore off Sand Beach during a gale, and was totally wrecked.

Fort Stockton, Texas, 13th.—A very heavy thunder-storm from the southeast, accompanied by rain and hail, occurred here on this date.

Sandusky, Ohio.—During the storm of the 17th the steamer "Saint John," from Toledo, was driven on the bar at the mouth of Sandusky bay.

Fort Stockton, Texas, 19th.—On the evening of this date a heavy storm of rain and hail prevailed at this place. The lower part of the town was flooded, and several families were compelled to leave their homes. A number of buildings were seriously injured.

Wellsburg, Brooke county, West Virginia.—A remarkably heavy rain storm occurred here on the afternoon of the 20th, during which 4.50 inches of rain fell. The greater part of this amount fell in about fifteen minutes—from 2 to 2.15 p. m. Hail accompanied the storm, covering the ground to a depth of one inch. But little damage was caused by the storm.

Madison, Wisconsin.—A heavy storm cloud was observed west of this city on the evening of the 20th. Before reaching here it divided, passing north and south of Madison. Rain fell in torrents at this place, but no damage was done.

Steuensville, Jefferson county, Ohio.—A heavy rain storm passed over the Ohio valley, between Wheeling and Wellsburg, West Virginia, on the evening of the 21st. The storm continued two hours and caused much damage along its course. A land-slide occurred on the Pittsburg, Wheeling and Kentucky railroad, causing delay of trains.

Nashville, Tennessee.—A severe hail storm is reported to have occurred at Gallatin, Sumner county, in this state, between 5 and 6 p. m., of the 23d. The hailstones are reported to have been unusually large, some of them weighing more than two pounds. Much damage was done to buildings, trees, and crops.

Large quantities of hail fell near the Cumberland river, six miles from Nashville.

Madison, Jefferson county, Indiana.—A violent wind and hail storm passed over this vicinity during the afternoon of the 23d, causing much damage to the growing crops. At Carrollton, Kentucky, twelve miles from Madison, considerable damage was done to buildings, and a number of boats were broken from their moorings. So far as is known this storm began near Hayden's on the Little Kentucky river; it crossed the Ohio river four miles from Carrollton, and then passed up the Ohio river to within a few miles of Cincinnati, Ohio. The greatest damage done was to the tobacco crop. The steamer "Samuel L. Keith" was caught in this storm when about seventeen miles below Cincinnati, and after trying for twenty minutes to force her way through the storm, was compelled to go to the bank for safety. The steamer's sky-lights were shattered by the hailstones, which were of large size. During the storm the water was kept in a continuous commotion by the falling hail, the water being splashed up to a height of several feet.

Vevay, Switzerland county, Indiana.—A violent thunder and hail storm passed over this vicinity between 1.30 and 3 p. m. of the 23d. The storm reached its maximum violence at 2.30 p. m., when the velocity of the wind was seventy miles per hour. A heavy fall of hail, lasting eight minutes, began at 2.45 p. m., accompanied by a deluge of rain, nearly 3.50 inches having fallen during the storm.

College Hill, Hamilton county, Ohio.—A violent hail storm passed over this locality between 3 and 4 p. m. of the 23d. Its path was nearly two miles wide and at the centre hail fell to depths of from two to four inches. The course of the storm was from southwest to northeast, and the fall of hail accompanying it is considered the heaviest that has been known since the settlement of this part of the country. A large amount of window-glass was destroyed, the proprietor of one green-house losing about 5,000 panes.

Buffalo, New York.—A strong gale began at this place on the afternoon of the 24th, and continued until the morning of the 25th. It reached its maximum violence at 2.38 a. m., when a wind velocity of fifty-two miles was recorded. The steam-barge "Empire State" left this port on the 25th and was driven back after having reached Erie, Pennsylvania.

Narragansett Pier, Rhode Island.—The storm of the 25th caused considerable damage to the stacked hay, oats, and corn in this vicinity.

Alpena, Michigan.—A heavy gale prevailed on lake Huron on the 25th, which caused considerable damage to shipping interests.

Toledo, Ohio.—A severe storm prevailed on Lake Erie during the early morning of the 25th, causing much damage to shipping.

Philadelphia, Pennsylvania.—During a heavy rain and hail storm on the Delaware river on the afternoon of the 28th, the boat "Lucy Wheatly" had her rigging and sails blown away. Several other boats were also damaged.

Lexington, Kentucky.—A severe storm occurred at this place on the afternoon of the 30th. A few buildings were completely destroyed, and a number were unroofed. Many chimneys, awnings, trees, &c., were blown down. The duration of the storm was about ten minutes. In the surrounding country great damage was done to barns, forests, and crops. The damage resulting from the storm in this (Fayette) county is estimated at \$15,000.

Frankfort, Kentucky.—A storm of wind and rain passed over this city on the afternoon of the 30th. But little damage was done at this place, but reports from other points show the storm to have been more severe, and that it resulted in serious damage.

Eminence, Henry county, Kentucky.—A violent storm passed over Henry and Shelby counties on the afternoon of the 30th. Houses were unroofed, barns destroyed, and many forest and orchard trees were blown down.